

REMARKS

Claims 1, 3-13, 15-19, 26, 27, 29 and 32-38 are pending in the application. By the above amendment, claims 1, 7 and 26 have been amended. Applicants acknowledge Examiner's indication that claims 17 and 37 include allowable subject matter. Reconsideration of the rejections and objections is requested in view of the following remarks.

Claim Objections

Claims 1, 7 and 26 have been amended to address the objection set forth on page 4 of the Office Action. Accordingly, withdrawal of the claim objections is requested.

Drawing Objections

FIGs. 8 and 9 of the drawings were objected to for not containing descriptive titles. The Examiner cites no legal requirement to amend the figures and only "suggests" that the figures be amended. In the last response, Applicants requested clarification and specificity as to what descriptive titles the Examiner wanted added to these Figures. However, the Examiner has merely cited lengthy descriptions of Figures 8 and 9 as written in the specification. These descriptions are not succinct or precise enough to put in the drawings or otherwise allow Applicants to discern what the Examiner wants added to the drawings. The Examiner should be aware that it is a costly endeavor to repeatedly have formal drawing modified and re-modified. Therefore, in this instance, if it is that important to the Examiner, the Applicants request that the Examiner explicitly state what descriptive title he wants added to FIGs. 8 and 9, so as to quickly resolve this seemingly unnecessary drawing objection, without Applicants having to incur any further undue costs associated with drawing changes.

Claim Rejections - 35 U.S.C. §112

Claim 4 was rejected as being indefinite. The rejection is traversed. The database can persistently store DC voltage characteristic data. There is nothing inconsistent or “unclear to one having ordinary skill in the art” as to how *DC characteristic data* could be measured, stored (in a database) and subsequently *obtained* from the database for *processing the DC voltage characteristic data* at a later time. The Examiner should read Applicants’ specification page 23, lines 11-24, for example. This rejection should be withdrawn.

Claim Rejections - 35 U.S.C. §103

The following obviousness rejections were asserted:

(i) Claims 1, 3, 5-10, 12, 26, 27, 29 and 32 were rejected as being unpatentable over U.S. Patent No. 6,275,094 to Cranford in view of Conti;

(ii) Claim 4 stands rejected as being unpatentable over Cranford in view of U.S. Patent No. 6,731,916 to Haruyama;

(iii) Claims 13 and 33 stand rejected as being unpatentable over Cranford in view of Conti and further in view of U.S. Patent No. 5,999,043 to Zhang et al;

(iv) Claims 11 and 34 stand rejected as being unpatentable over Cranford in view of Conti and further in view of Zhang and further in view of U.S. Patent No. 6,819,183 to Zhou et al.

(v) Claims 15, 16, 35 and 36 stand rejected as being unpatentable over Cranford in view of Conti and further in view of U.S. Patent No. 4,851,768 to Yoshizawa et al;

(vi) Claim 18 stands rejected as being unpatentable over Cranford in view of Conti and further in view of U.S. Patent No. 6,181,621 to Lovett.

(vii) Claims 19 and 38 stand rejected as being unpatentable over Cranford in view of Conti and further in view of U.S. Patent No. 6,798,278 to Ueda.

The above rejections are all traversed. At the very least, regarding the above obviousness rejection (i), the Office Action glaringly fails to provide a legally sufficient showing to establish a *prima facie* case of obviousness against claims 1, 10, 26 and 27. The Examiner's reliance on Cranford and Conti is misplaced for the following reasons.

Indeed, Cranford is directed to a method for dynamically adjusting the threshold voltage of a CMOS device in a receiver to provide improved noise margin and to a method for dynamically matching the threshold voltages in a differential amplifier to correct for manufacturing offset (See Abstract). On page 6 of the Office Action, the Examiner contends that Cranford teaches *obtaining DC characteristic data for a device pair* (Col. 7, lines 4-9, Col. 8, lines 1-4) *comprising a DC voltage as a function of an input DC voltage* (col. 7, lines 14-16). However, other than a bald citation to the above sections, the Examiner does not provide any explanatory support for this assertion. The cited sections merely describe circuit connections of a differential pair amplifier formed by 4 transistors (FIG. 4 of Cranford), and there is seemingly nothing that discloses *obtaining DC Voltage characteristic data for a device pair*, as claimed. In fact, the Examiner does not even identify what transistors in FIG. 4 of Cranford he considers the claimed device pair for which DC voltage characteristic data is obtained.

In any event, on page 8 of the Office Action, the Examiner admits that Cranford does **not teach** obtaining DC voltage characteristic data of a transistor pair when the transistors are operating in the sub-threshold region. In this regard, the Examiner essentially acknowledges that

Cranford does not teach an important, fundamental feature of the claimed inventions. Instead, the Examiner relies on Conti as teaching “obtaining subthreshold DC voltage characteristic data for adjacent transistors”.

The Examiner’s reliance on Conti in this regard is *grossly* misplaced on two fundamental levels. First, *Conti* teaches a mismatch model based on measurements of drain current ID (see page 173, second column on bottom). The Examiner continues to misunderstand the *fundamental difference* between **DC Voltage characteristic data** (as claimed) and **DC Current characteristic data** (as disclosed in Conti). In this regard, Conti clearly teaches away from the claimed invention for those reasons previously explained, and renders the rejection legally deficient on its face.

Moreover, the motivation argument set forth on page 9 of the Office Action to justify the combination of Cranford and Conti is meritless. Other than a conclusory assertion, no reasonable, relevant explanation is offered as to why Cranford can be modified such that differential amplifier of FIG. 4 of Cranford can be properly operated with transistors operating in a sub-threshold range, for example. However, Cranford is not related to device characterization to determine mismatches using DC voltage data of device pairs operating in sub-threshold region, but rather making adjustments for threshold mismatches during normal operation. In this regard, the Examiner’s attempt to combine Conti’s teaching of a test structure for mismatch characterization of MOS transistors in sub threshold region based on DC CURRENT (Drain Current Id) data with Cranford’s teaching of dynamic threshold matching for runtime operation of a differential amplifier, renders the obviousness rejection erroneous on both technical and legal grounds.

For at least these reasons, the rejections of claims 1, 10, 26 and 27 should be withdrawn. Moreover, without elaboration needed, claims 3, 5-9, 29 and 32 are patentable over the combination of Cranford and Conti for at least those reasons given for respective base claims 1, 10 and 27. As for the remaining rejections (ii) ~ (vii), since each rejection is based on the primary combination of Cranford and Conti as applied to claims 1, 10, 26 and 27, the rejections are legally defective on their face for at least those reasons give above. Accordingly, withdrawal of the obviousness rejections is requested.

Respectfully submitted,



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